519,489

(54) Title: PROCESS FOR COMPILING AND EXECUTING SOFTWARE APPLICATIONS IN A MULTI-PROCESSOR ENVIRONMENT
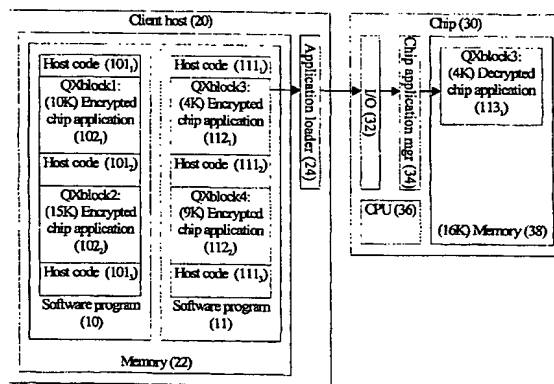
Dynamic upload, decryption and execution of protected chip application blocks (time = t1)

(57) Abstract: The present invention relates to multi-application, secure operating systems for small, secure devices, such as smart card microcontrollers. In particular, the present invention relates to mechanisms for secure runtime upload of applications onto small devices, authorisation mechanisms and the ability for authorised execution of multiple applications on the devices, where an application may be potentially larger than the microcontroller memory size. The mechanism simplifies life-cycle smart card management aspects related to post-issuance application ("applet") upload and upgrade. Mechanisms to prepare applications (i.e. compiler techniques) using a common set of project files in one compiler toolset, for execution in a dual host & chip processor environment are described. These help automising the programming of the communication interfaces between the host and chip applications. An important motivation for the present invention is to provide a secure co-processor environment for general computer applications in order to counter software piracy, and to allow new models for secure electronic software distribution and software licensing.